

Pathologic-Diagnostic

Committee:

Dr. Kotin, Chairman
Dr. Lynch
Dr. Reimann

#342

TOBACCO INDUSTRY RESEARCH COMMITTEE

150 East Forty Second Street New York 17, N.Y.

Application for Research Grant

Date: February 21, 1962

1. Name of Investigator: Daniel Stowens, M.D.
2. Title: Director of Laboratories, Associate Professor of Pathology.
3. Institution Children's Hospital, 226 E. Chestnut St., Louisville, Ky.
& Address: University of Louisville School of Medicine, 101 W. Chestnut St., Louisville, Ky.
4. Project or Subject: Effect of automobile exhausts on the tracheal-bronchial tree and lung: an experimental study.
5. Detailed Plan of Procedure:

Several studies have correlated the degrees of air pollution with the exacerbation of chronic or pre-existing pulmonary disease. There have also been some reports relating a possible connection between air pollution (especially that portion contributed by motor vehicles) with increased incidence of carcinoma of the lung. The purpose of the proposed study is to determine experimentally whether automobile exhaust products produce anatomic lesions in experimental animals and, if so, to determine what fraction of the exhaust is responsible.

Automobile exhaust products will be collected by the attachment of a compressor to the exhaust system of a standard automobile. The entire exhaust mass will be brought to 150 pounds per square inch pressure. At this pressure, it has been determined by previous work and analysis that 99% of the compounds which have a boiling point above $-10^{\circ}\text{C}.$, will be precipitated. The component of the exhaust remaining in a gaseous state at this pressure consists mainly of nitrogen, carbon dioxide and carbon monoxide. The gaseous portion will be vented to the exterior.

(The principal investigator has previously built and operated successfully such a device.) The necessity for collection of exhaust material in this fashion is dictated by the fact that, using such a condensate, it will be possible to insure adequate oxygen levels in the re-suspended atmosphere and to avoid toxic accumulations of carbon monoxide.

Experimental animals will be housed in cages which will be placed in closed rooms in which the atmosphere and concentration of air pollutants will be able to be controlled. Re-suspension of the condensed exhaust material will be by means of a standard nebulizer (manufactured by Thomas Industries) operated by a small compressor. This nebulizer is capable of producing particles of the size of 4 micra.

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The experiments will involve varying the concentration of pollutants in the atmosphere; varying the length of time of exposure of the animals to the air pollutants, and by testing the effects of the two major fractions of the exhaust on the animals, the water extractable portion and the chloroform extractable portion. Animals will be sacrificed and histopathological studies of the tracheo-bronchial tree and lung will be performed.

6. Budget Plan:

a. Salaries	9,000.00
b. Expendable Supplies (incl. animals & upkeep)	2,000.00
c. Permanent Equipment	500.00
d. Overhead (15% of a, b, e)	1,725.00
e. Other	500.00
Total	\$13,725.00

7. Anticipated Duration of Work: One to two years.

8. Facilities and Staff Available:

Histopathology laboratory, photomicrographic laboratory, animal house, research assistant, diener.

The Children's Hospital is an integral part of the University of Louisville School of Medicine and considerable professional, technical and other support is available from the School.

9. Additional Requirements:

No additional requirements are anticipated. However, it may be necessary to perform certain gas analyses for which outside assistance on a contract basis might be necessary.

10. Additional Information (Including relation of work to other projects and other sources of supply):

This project is an attempt on the part of the principal investigator to correlate his interests in what, until the present, have been two separate fields of study; the possible causes of tumors in general, and air pollution. At the present time no support for the research from other sources has been obtained.

Signature Daniel Stowens
Director of Project

Fredric R. Heeder
Business Officer

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